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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,137	03/29/2004	Kunio Takeuchi	57810-096	1117

7590 01/05/2007  
MCDERMOTT, WILL & EMERY  
600 13th Street, N.W.  
Washington, DC 20005-3096

EXAMINER
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NGUYEN, DUNG T

ART UNIT	PAPER NUMBER
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2828

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/05/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/811,137

Applicant(s)

TAKEUCHI ET AL.

Examiner

Dung (Michael) T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2-18 and 24-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-18 and 24-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

The indication of allowed claims 7-8, 15-17, and 24-26 in the office action sent on 07/30/06 are withdrawn due to the newly found prior art.

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3, 5, 7-12, 14, and 18 are rejected 103(a) as being unpatentable over JP2002-223039 along with English translation in view of the admitted prior art (APA).

With respect to claims 2-3, 7-8, 10, and 14, Fig. 1 of JP2002-223039 shows a semiconductor laser device comprising:

an emission layer 4 formed on a substrate 1;

a semiconductor layer 8a formed on said emission layer while constituting a convex ridge portion;

a current blocking layer 10 consisting of a semiconductor formed to cover at least the side surfaces of said ridge portion;

a first metal electrode 11 formed to be in contact with the upper surface of said ridge portion; and

convex support (dummy) portions (8b, 9b) arranged on both sides of said ridge portion at a prescribed interval from said ridge portion.

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JP2002-223039 lacks said convex ridge portion and said support portions are mounted on a submount through a welding layer.

APA teaches in Fig. 51 a submount 251 and a welding layer 253.

it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide JP2002-223039 what is taught by APA to function as a heat sink absorbing heat of the semiconductor laser device (p.4, 1.24-25).

With respect to claim 5, Fig.1 of JP2002-223039 shows said first metal electrode includes an upper surface having an irregular shape reflecting the shape of said convex ridge portion, the shape of said support portions and the shape of said current blocking layer.

With respect to claim 6, Fig.1 of JP2002-223039 shows the height of portions of said first metal electrode located on said support portions exceeds that of a portion located on said ridge portion.

With respect to claim 9, Fig.1 of JP2002-223039 shows side surfaces of said support portions closer to end surfaces of said semiconductor laser device are arranged inward beyond said end surfaces of said semiconductor laser device at a prescribed interval.

With respect to claim 11, para.0030 of JP2002-223039 discloses the thickness of the electrode (contact) is 6 um.

With respect to claim 12, para.0028 and 0030 of JP2002-223039 disclose said first metal electrode (contact) contains a dopant (p mold) having the same conductivity type as said semiconductor layer 8a constituting said ridge portion.

Claims 4 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-223039 along with English translation in view of APA and further in view of Goto et al. (2002/0146855). JP2002-223039 and APA disclose all limitations of the claims except for the first metal electrode includes a plurality of metal electrode layers and further a second metal electrode formed on the first metal electrode, superior in adhesiveness to the first metal electrode.

Goto et al. teach in Fig.1 and Abstract the first metal electrode includes a plurality of metal electrode layers 109-110 and further a second metal electrode 112 formed on the first metal electrode, superior in adhesiveness to the first metal electrode.

it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide JP2002-223039 and APA what is taught by Goto et al. in order to improve the semiconductor laser in reliability and to reduce in operating voltage (Abstract).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-223039 in view of APA and further in view of Hayafuji (5387544). JP2002-223039 disclose in para.0028 said semiconductor layer 8a (AlGaAs) constituting said ridge portion consists of a group III-V compound semiconductor and all limitations of the claim except for the dopant, contained in said first metal electrode, having the same conductivity type as said semiconductor layer constituting

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said ridge portion includes at least one element selected from a group consisting of Zn, Cd, Be, Mg, Ca and Ba.

Hayafuji teaches the dopant of Zinc in the metal electrode (col.1, lines 38-41).

it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide JP2002-223039 and APA what is taught by Hayafuji in order to obtain a better electrical conductivity in the electrode of the laser device.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-223039 along with English translation in view of Mazed (2002/0028390). JP2002-223039 disclose all limitations of the claim except for said emission layer includes a plurality of emission layers, formed on said substrate at a prescribed interval, each having an emission portion.

Mazed teaches in Fig.1A-1B said emission layer includes a plurality of emission layers, formed on said substrate at a prescribed interval, each having an emission portion 10a-10d.

it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide JP2002-223039 what is taught by Mazed to obtain a multi-wavelength semiconductor laser array device (para.0040).

Claims 16-18 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-223039 along with English translation in view of Mazed (2002/0028390).

With respect to claims 16-17 and 24-25, JP2002-223039 disclose all limitations of the claim except for the interval between the lower end of said ridge portion and the lower ends of

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said support portions is at least 20 um. Mazed teaches in Fig.1C the interval between the lower end of said ridge portion and the lower ends of said support portions is 30um (at least 20 um).

it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide JP2002-223039 what is taught by Mazed to fabricate durable and reliable laser chip (para.0012).

With respect to claim 18, para.0029 of JP2002-223039 discloses the current blocking layer containing Al.

With respect to claim 26, para.0041-0043 of JP2002-223039 disclose said step of forming said current blocking layer includes steps of: forming a mask consisting of a dielectric substance on the upper surface of said ridge portion, and crystal-growing said current blocking layer consisting of a semiconductor on a portion other than said mask.

### Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung (Michael) T Nguyen whose telephone number is (571) 272-1949. The examiner can normally be reached on 8:30 - 17:00.

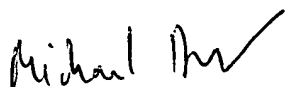
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.

A handwritten signature in black ink, appearing to read "Michael" followed by a stylized, cursive flourish.

Michael Dung Nguyen

12/19/06